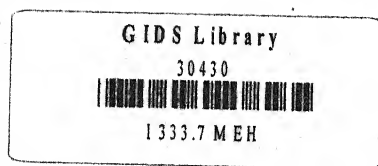


Environmentally Sustainable Land-Based Development Approach For Uttarakhand :

a Note

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G S MEHTA



INSTITUTE OF DEVELOPMENT STUDIES

ector 'O', Aliganj Housing Scheme

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G.S. MEHTA

*For
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MEH
Environment
Control Dept*

**GIRI INSTITUTE OF DEVELOPMENT STUDIES
Sector 'O', Aliganj Housing Scheme
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INTRODUCTION

Uttarakhand, the most underdeveloped region of India, is situated in the northern part of State Uttar Pradesh. This region, a part of Central Himalayan range extends for over 51.25 thousand sq. Kms and accounts 17 per cent of the total area of the state. The population of the region, as per 1991 census is 5.87 million, which constitutes 4.23 per cent population of the state. Agriculture is the main source of employment and income for the people of Uttarakhand. But it is unable to provide full time gainful employment to the labourforce and adequate income to the households engaged in it. Yet, the pressure of population on agriculture is consistently increasing due to the scarcity of employment outside agricultural activities. Low and stagnant yield levels have further accentuated the problem. (Mehta (1998)¹.

Given the limited availability of arable land, agriculture may not be able to create additional employment and income opportunities for the increasing population. All the same, better use of available land can significantly improve the yield rates and income

of farming households. The existing land use pattern and its management have also aggravated the problem of environmental degradation, resulting not only in decreasing overall productivity of land but also its gradual destruction by floods, landslides and desertification through soil erosion.

CONCEPT OF LAND BASED PLANNING

Issues related to land use pattern and land management need to be given foremost consideration in mountain areas (Banskota 1993).² The obvious objective of a land based planning exercise is to allocate the available land for alternative uses and to maximise the returns and per hectare productivity of land (Shah 1986).³ In the context of Uttarakhand, it implies a basic shift of available land from the production of low-value food crops to production of high-value crops inconsonant with the environment and ecology of the region. In effect, it should aim at; (1) a shift in pattern of the use of land already under cultivation, (ii) greater emphasis on horticulture (iii) productive use of deforested land; and (iv) development of grasslands and pastures to support a more productive animal husbandry sector.

These are several concepts and methodologies for land capability classification in mountain areas. Past studies (Khybri 1978⁴, Kango 1979⁵, Hudson 1979⁶ and Shah 1986⁷) have divided land in Uttarakhand into different classes on the basis of depth and texture of soil, the stone-soil ratio, slope of land, and erosion status. However, the Forest Department of Uttar Pradesh argued that land capability classification is not much use for

Himalayan areas and instead it uses erodibility characteristics when formulating watershed development plans.

THE APPROACH

(A) CLASSIFICATION OF LAND

It has increasingly been felt important that the cultivated land in Uttarakhand could best be classified into two categories; talaon and upraon, the former being relatively flat with fertile soil and endowed with water for irrigation, and the latter slopping land, with high stone contained and with any means of assured irrigation. (Mehta 1997)⁸. The talaon land in the region is mainly for the production of wheat during the rabi and paddy during the Kharif season, with some land used for growing pulses, oilseeds and vegetables. The upraon land is used for the purpose of growing low-value-crops, such as bajra (pearl millet), madua and sawan, mainly during the rainy season. On the talaon land, technological improvements through application of modern inputs would be an appropriate strategy for increasing productivity per hectare.

Productivity of uproan land could also be improved by using appropriate technologies to conserve and improve soil fertility. Among the technologies, using environmentally sound methods for sustainable agricultural development, e.g., Sloping Agricultural Land Technology (SALT), has been found to be quite successful in most mountain areas (ICIMOD) 1996.⁹ SALT primarily consists of contour farming with the use of appropriate nitrogen-

fixing hedgerows. Regular pruning of headgerows provides bio-mass for mulching and for improving soil properties. SALT demonstration and implementation programmes could be undertaken with the participation of a maximum number of farmers and involving agricultural extension workers, NGO's, and agricultural departments in different areas of Uttarakhand. Apart from traditional crops, some land could be profitably used for growing potatoes spices and off-season vegetables.

(B) REALLOCATION OF LAND:

Reallocation of land will need farmer's support to adopting changes from the traditional cropping pattern and practices. Over the years, the farming community has become quite aware of the fact that a shift from the production of low value crops to relatively high-value commercial crops on available land has significant advantages in terms of higher returns. (Mehta 1996)¹⁰. Therefore the mobilisation of public support for this purpose may not be difficult, but they are hesitant to adopt changes because of high production and market risks and if this is not handled properly, it could deprive farmers even of the limited subsistence they now derive from crops. It is necessary to provide easy access to support services, such as seeds, fertilizers, production technologies, improved agricultural devices and methods, and marketing infrastructure in order to increase yield levels and minimise the risk involved in the shift from food-control subsistence production to niche-based commercial production.

It would, however, be desirable to use most of the relatively less fertile upraon land and single-cropped land for the plantation of different fruit-based on the feasibility and suitability of the land, i.e., according to the topographical and agro-climatic conditions. Since the prevailing climatic conditions and the topography are fairly well suited to the cultivation of various temperate, subtropical and tropical fruits. Also the region has wide scope for growing different kinds of vegetables, flowers, ornamental plants, mushrooms and medicinal plants in its different climatic zones. Temperate fruits such as apple, pears, plums, apricots, cherries and walnuts are grown at elevations of from 1000 to 3000 mash. And at elevation ranging from 3000 to 1400 metres, fruit such as citrus, mangoes, litchi, bananas, guarvas, papaya, strawberries and different vegetables are grown successfully (Seth 1993)¹³ In fact, the higher economic returns are derived from horticultural crops, particularly apples, than from the cultivation of field crops, is well established. Apple cultivation is found to provide 77 per cent more employment and 58 per cent more income than the cultivation of agricultural crops. (Mehta 1987).¹⁴

The advantages of developing horticulture in Uttarakhand are not confined to the creation of employment and income opportunities. Horticulture is equally important from the perspective of environmental conservation. It contributes to the increase in permanent green cover on the soil, besides acting as a soil binder, thereby preventing soil erosion and landslides considerably. Plantation of fruit trees also helps to replace soil nutrients which are lost and cannot be used by field crops because of their reach into deep soil layers.

Growing different types of fruits, even on a small land holdings has gained a significant importance in the region over the years. The area under different fruits has increased from 152 thousand hectares in 1984-85 to 179 thousand hectares in 1993-94. Production of fruits has increased from 330 thousand tonnes to 470 thousand tonnes during the same period. A shift of 1.5 per cent of the land from the production of agricultural crops to the plantation of fruits has resulted in 18.39 per cent of additional fruits during the period from 1989-90 to 1993-94. The land used for the production of various vegetables in the region increased from 34 thousand hectares in 1984-85 to 65 thousand hectares in 1993-94, and the production of vegetables increased from 130 thousand tonnes to 238 thousand tonnes during the same period. This clearly indicates that growing of fruits and vegetables has spread over larger areas of land.

No doubt, farmers are well aware of the economic benefits to be derived from the use of available land for different horticultural plants instead of growing low value traditional crops. This can be seen by the fact that the land area cultivated with different fruits and vegetables have increased consistently over the years. The potentials for horticulture in the region is well recognised and farmers are keen to engage in horticulture provided proper marketing arrangements are available. One case study (Mehta 1988)¹¹ revealed that nearly 63 per cent of fruit growers have expressed a desire to expand orchard size by additional plantation of fruits. Farmers who are not growing fruits would like to do so, but the problem of marketing poses a major constraint.

Inadequate marketing arrangements are, thus, major bottlenecks to the further development of horticulture in the region. The 'advance' or 'pre-arranged' sale of orchard crops is the most prevalent marketing arrangement in the region, and it favours fruit contractors rather than fruit growers; as the contracted prices are usually significantly lower than market prices (Mehta 1988).¹² At the same time, fruit grown in remote and less accessible areas does not find a convenient market; collection of fruit from these areas, even by contractors, is difficult. Most is either used for domestic consumption or goes to waste.

In view of the marketing problem, organising fruit growers in co-operative societies and developing of fruit marts (mandies) and marketing centres in the main fruit-growing areas would be a necessary and effective step for the development and diversification of horticulture in Uttarakhand. This would also prevent perpetuations of the inequitable linkages prevailing between fruit growers and contractors. As a result of the poor economic conditions of many fruit growers, the system of pre-harvest contracting is perpetuated because they receive part of the payment in advance from the contractors. Marketing arrangements, therefore, would need to ensure sale of fruits at remunerative prices and to make available crop credit from banks or other financial institutions. A network of co-operative societies, including primary credit societies, would probably be the effective system for this purpose.

Further, the shift from the production of foodgrains to the plantation of fruits would initially mean hardship for the farmers, particularly those owing very

small parcels of land since the fruit trees need at least five to six years to develop before they can bear fruits and earn income. The Government has, in recent years, introduced a scheme providing grains, particularly rice, to farmers willing to grow fruit trees. Fruit saplings are distributed to interested farmers free of cost by Horticulture Department through the Block Development Office. The quantity of rice to be given to each farmer in lieu of planting fruit trees is fixed by the number of trees planted. In view of free supply of foodgrains, the programme may attract unscrupulous elements and engenders corruption. It would be advisable to convert part of the foodgrains to a long-term interest free loan, so as to ensure that a well-intentional programme does create a situation of dependency.

Farmers should also be encouraged and helped to carry out inter-cropping on land where fruit trees are grown. Various high-value commercial crops have to be identified by carrying out research on the quality and suitability of soils for growing particular crops. A study by Koranne (1996)¹⁵ revealed that studies carried out over the period of four years on raising pecan nut trees in different crop sequences have clearly shown that Soyabeens during the kharif crop season and peas in winter (rabi crop season) successfully complemented the nut trees. In fact soyabeens performed consistently well in association with trees rather than as a sole crop. Intercropping in between fruit trees with oilseeds and local varieties of pulses has been quite successful over a period of four to five years in most orchards in Nainital and Almora; in fact the value of pulses and oilseeds grown as an intercrop is estimated to be much higher than when traditional crops were grown on the same land.

Nevertheless, in some areas, around 20 to 35 per cent loss in production of agricultural crops as a result of intercropping with fruit trees has been estimated (Mehta 1988)¹⁶. The yield will, of course be, relatively lower while cultivating food crops without fruit trees, but atleast some food requirements will be met. In addition, the ongoing employment programmes run by the Central and State Governments such as the Jawahar Rozgar Yojana and especially, its Employment Assurance Scheme, which aim to provide income to poor households through wage employment; could be applied, with suitable modifications, if necessary, to provide food security to farmers who are shifting to non-food crops. Further, shifting to cultivation of fruits means that the public distribution system should be strengthened to ensure that adequate quantities of foodgrains are available and at affordable prices.

**(c) DEVELOPMENT OF PASTURE, CULTIVABLE AND
PERMANENT FALLOW LAND:**

The third element in the land-based development strategy in Uttarakhand involves issues linked to the development of pasture land, permanent fallow land and cultivable land, which account for 18 per cent of the reported geographical area. In fact, the land under forest is officially recorded as 64 per cent of the geographical area, but the data revealed by satellite imagery indicate that only 28.7 per cent of area is effectively under forest cover. This indicates that around 35 per cent of the geographical area which was under forest cover earlier is currently being wasted or used for grazing animals; although this area is not necessarily planned as or developed as pasture land.

The first priority for this category of land should be to bring more under effective forest cover. This is essential for regeneration and protection of the environment, as forests are the major protectors of the environment and deforestation is the major reason for environmental degradation in Uttarakhand.

There is also an urgent need to classify deforested land, fallow land, wasteland and pastures into different land categories based on quality and suitability for different uses; e.g., for wood and non-wood forest products, plantation of fruit trees, for medicinal herbs, and so on. Most land in these categories is controlled by the local village community. It is known as common land and villagers have common rights over its management and use. However, deforested land, in some cases, is under the forest department as it earlier formed part of the reserved forest. Increasing population pressure on agricultural land and poverty has forced people to encroach on common lands. Most common land in the villages is not suitable for cultivating food grains or for other agricultural purposes, so it is left uncultivated and used for grazing and production of fodder. For an ecologically sustainable and economically beneficial use of these lands, it is necessary to encourage organisations of the people for better management and use. Besides maximising the participation of local inhabitants, it is also important to include committed NGO's, representatives from the forest department and related government departments, and locally elected representatives at different stages of programme implementation.

It should be recognised that afforestation programmes should not be confined to the single objective of protection and regeneration of environment. They should pay equal attention to the basic requirements of the local people. Forest are the main source of supplies of fuelwood for cooking and heating purposes, fodder for animals, timber for construction of houses, and so on. At the same time, due to the increasing level of commercialisation and industrialisation in the plains outside the Uttarakhand region, the local people have also been tempted to exploit the forests for profit. Local community organisations, which shoulder the responsibility to manage their own forest resources, can be the most effective way to check this trend. Forest Panchayats, which have performed this function effectively in most parts of Kumaun (Almora, Nainital and Pithoragarh District), sub region of Uttarakhand (Mehta 1999)¹⁷ need to be revamped and supported for this purposes. Careful attention is required to provide alternative ways of meeting the local needs, which are currently fulfilled by forest resources. Since fuelwood, a prime need, is provided by the forests, development and access to alternative energy options are crucial for checking deforestation.

CONCLUSIONS

In spite of possessing certain area specific comparative advantages and opportunities for developing various economic activities and availability of increasingly larger amounts of funds and decentralisation efforts initiated in the past development plans the region has remained underdeveloped and the growth of its economy has been almost stagnant. What appears to be lacking

in the approach to development planning for Uttarakhand is integration between aspects of environmental and economic development, on the one hand, and between development of infrastructure and economic activities and among different activities, on the other. Thus, the regional development has been characterized by virtual economic stagnation with environmental degradation, thereby suggesting that development based on neglect of the environment does not yield even short-term economic results, let alone long-term sustainability. It

may therefore be suggested that the initiation of comprehensive land-based development planning with identifying an appropriate approach for its implementation would be a most instrumental measure for integrated economic and environmental development in Uttarakhand.

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